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The Volunteer Review

AND MILITARY AND NAVAL GAZETTE.

A Journal Devoted to the Interests of the Military and Naval Forces of the Dominion of Canada

VOL. VIII. OTTAWA, (CANADA,) TUESDAY, DECEMBER 8, 1874. No. 49.

NEWS OF THE WEEK.

We believe the Minister of Militia is in treaty with the proprietors of the Rink Music Hall to lease the building for a drill shed, for which purpose it is well adapted,

We understand that Capt Blakely of St. Paul, Minn, who has the contract for carrying the United States mails tri-weekely between Minnesota and Fort Garry, has come to Ottawa to urge on the Government the advantage of changing it from tri-weekly to a daily mail, which we have no doubt would be very acceptable to the citizen of Winnipeg.

A telegram from Fort Garry dated December 4, brings the news of the resignation of the Ministry, and the formation, and the formation of a new one under the leaderships of the Hon. R. A. Davis. The Legislative Council is abolished. The following constitute the new Government:—Hon. R A. Davis, Provincial Treasurer and Premier; Hon. Joseph Royal Minis of Public Works and Provincial Secretary; Hon. Colin Inster, President of the Council, thus reducing the Cabinet from five to three members.

The officers of the Provisional Battalion on duty at Fort Garry who have been mustered out are the following; Major A. G. Irvine, Capt. Thos Scott, J. P. Fletcher, S.B. Harman; Lieuts. C. Constantine, J. Allen; Ensign G. Gow and Lieut Anderson, Dominion Artillery.

The Winnipeg City Council, on Monday evening 16th Nov., voted an address to Major Irvine expressive of their esteem and regret at his severane from the Active Militia force on duty in Manitoba.

The Winnipeg Field Battery, under Major Kennedy, are putting in their annual drill. The men muster well every evening and take an interest in their drill.

It is reported that the Dominion Government have applied to the proper authorities for space for Canadian products in the Centennial Exhebition at Philadelphia.

An American exchange says: This has been a year of storm and flood. While lands have suffered severely by devastation our own country has been the greatest sufferer. Some of the calamities have been appalling from the loss of life that accompanied them. The broken reservoir at Mill River, the flood at Pittsburg and the waterspouts in Navada swept away hundreds to death, while the inundation of the leeve lanes of the Lower Mississippi destroyed millions of property. In the November gale which swept through the land, the year evinced its determination to keep up its ruputation of destructiveness to the last. In its wild sweep from the gulfs to the Lakes, it took at least twenty lives, left scores of wounded in its track, and ruined an immense amount of property. In the cities it proved destructive only to umbrellas, awnings and chimney pots.

Mayor Havemeyer died suddenly at his office in the City Hall building, New York, this morning, November 30th.

The death of Mayor Havemeyer, and the succession of Alderman Vance to the Mayoralty, removes the strongest opposition to the proposed million dollars appropriation for the completion of the New York and Brooklyn Bridge, and leaves Controller Green in a minority in the Board of Estimates and apportionments,

Honey is being sent from San Francisco to the Atlantic by the car-load, some 150 tons having already been shipped East by Pacific Railroad this fall season.

Men in New York State who get drunk in a saloon, and then break all the glassware in the place, cannot be made to pay the damage. The seller of the liquor is, under the present law, liable for the injury done by the drinker.

A Spanish gunboat arrived with a small schooner in tow flying the British flag. The vessel was found on the coast twenty-five miles from the port, and two miles and a half from the shore. She still carries the British colors, although an armed crew from the gunboat is on board.

Much interest is manifested as to what course Great Britain will pursue in relation to the seizure, and taking to Santiago, De Cuba of the schooner flying the British flag, it being only a year since the Virginus trouble occurred between Spain and the United States.

The Carlists have laid siege to Baega fifty miles from Barcelona.

A typhoon occurred at Yeso, Japan, on October 12th, and many sea coast villages were greatly injured, one of which was entirely destroyed. Thirty-three junks were wrecked, and 300 lives were lost.

There have been no disturbances in the Fiji Islands since the British Government assumed the sovereignity.

Prince Arthur, while out riding to-day, was thrown from his horse, at Norwich, and sustained a fracture of the leg.

Russia contemplates the reassembling next March in St. Petersburg of the International Law Conference lately held in Brussels. Exertions will probably be made to secure the consent of Great Britain and some minor states. The work of the conference will be confined to the enactment of more purely philanthropic clauses of the programme proposed by Russia. If these endeavors fail, the three northern powers may possibly settle the matter alone.

Twenty one lives were lost on the Scottish coast line during the gale of Saturday and Sunday.

One of the oldest "of England's wooden walls" vessels in the Royal Navy of the past century, the three-decker line of battle ship *Dreadnought*, is to be broken up, an order to that effect having been received at Chatham Dockyard. The *Dreadnought* was for many years used as a hospital ship for seamen of all nations in the Thames, until she became unfitted even for that service, and she was accordingly removed to Chatham, where she has since been stationed, another vessel of war being sent to take her place as a hospital ship in the Thames. Her timbers, notwithstanding her great age, are believed to be still sound.

Winter has sent in with great severity in the north of Scotland. Snow has fallen heavily in Invernesshire and Aberdeenshire the fall was heavy and the cold intense.

The Queen in person presented medals to the marines and blue jackets who specially distinguished themselves in the Ashantee campaign.

Numerous finds of diamonds are reported from the Gold Coast, and a large party of Australian diggers have arrrived and commenced active operations. Business at Cape Town is still depressed.

A circular letter from Archbishop Manning was read in all the Catholic Churches of the Dioceses on Sunday the 29th inst., declaring that all persons who do not accept the dogma of Papal infallibility ceases to be Catholics.

The Italian Chamber of Deputies, on the 2nd, agreed by unanimous vote to take up at once the question of an annuity to Garibaldi.

Mass was celebrated at Berlin, on the 29th Nov., for the first time by a priest of the "Old Catholic" Church. The congregation numbered about three hundred, of whom twenty received communion.

Captain G. S Nares, now in command of Her Majesty' ship *Challenger*, has been selected to command the expedition to be fitted out by Great Britain for exploration in the Arctic regions.

THE KRUPP ORDNANCE.

The *Standard*, which has been publishing a series of articles from a well known hand in praise of our ordnance and things and persons connected with the manufacture thereof, had been rather "put out" by the report of Captain Simson, (Captain Edward Simpson, U. S. Navy,) to the United States Government, on the artillery of European Powers, and set itself to work to *denigrer* the Krupp gun in a recent number. It will be matter of sincere congratulation to us if the conclusions of our contemporary turn out to be correct, and we have not a word to say against what the *Standard* asserts respecting the claims of Colonel Campbell and Mr. Fraser of Woolwich to gratitude and thanks for what they have done. We believe them to have improved very much on the Armstrong gun in simplifying without weakening the construction, and to have done immense service in the great economies they have introduced in the cost of the iron and the processes of manufacture. But that is a matter quite apart from the merits of Krupp ordnance. It may strike our contemporary as a very curious fact, if he can only clear his mind of prejudices, and consider the matter without one eye on Woolwich and the other somewhere else, that a very thrifty country like Prussia, and a very impoverished country like Austria, should deliberately select steel, and that Russia, having at her command confessedly the best iron in the world, should find it the best material for ordnance, if the Krupp guns be at once so costly and so dangerous It is not for want of steam hammers that they refuse to accept the Woolwich system of ordnance. Ever since Nasmyth's invention revolutionized the whole construction and material of artillery—for to the steam-hammer we owe built up guns, gaint coils, plated ships, and all their concomitants—foreign workshops have been provided with them, and the largest hammer of that sort now in existence, if we be not mistaken, is at Krupp's factory at Essen. Captain Simson (Simpson) seems inclined to give the palm of excellence to Krupp and Russian steel. but he admits that "the more scientific construction of their guns" may have something to do with the contentment expressed by artillerymen with the character of the material. The *Standard* quotes from Lieutenant Haig's paper a list of explosions of Krupp guns which we admit to be very serious, but those who use them are not deterred from their preference by the accidents and in the very same number of the paper which contained the criticism there is an account of the *Temeraire* and *Superb*, in which we may find some explanation of the comparative immunity of Woolwich guns from destructive explosion. They are much heavier than the Whitworth guns, which are built of steel, and very like Krupp and Russian guns in many respects. The 38-ton Whitworth fires a 1,200 lb. projectile with 150 lb. of powder. The 35 ton Woolwich gun fires a projectile of only 750 lb. with a charge of a 110 lb. of powder. As to the question of expense, it must be remembered that the Krupp gun is paid for like a watch or any other piece of mechanism, and that the price must represent a profit to the manufacturer; whereas our Woolwich gun is only charged with the cost of material and labor, and no part of the charges connected with the establishment in which it is made is taken into account. Our contemporary proceeds to remark:

"As for the advantage of breech loading, those who have read the recent article in these columns on "The Growth of the Guns" will apprehend that the inducements to adopt breech loading for naval ordnance are utterly passing away. Much has lately been said about the achievements of the Krupp field gun at Steinfeld, and a perfect panic seems to have seized the Austrians on the subject. Perhaps there is a little statecraft in this The Austrian Government are probably aware that the bronze guns are out of date, and are anxious to rush into steel. A good panic will reconcile the taxpayers to the cost, and the idea that the new field guns will be an improvement on the Prussian will help to make the change all the more popular. The wonderful number of hits made with the Krupp gun is much dwelt upon. But a few details on this point would be useful. Did the steel gun use the same projectile as the bronze? Some time ago the Prussians sent one of their field guns to this country, it was fired against one belonging to the British service. At 1,500 yards the British gun proved its superiority in hits, in the proportion of 433 to 150. But this difference in our favor was attributable, in some degree, to our shrapnel shell, whereas the Prussians made use of the common shell. At all events, there is nothing in the trials at Steinfeld to cause any alarm in England. The Austrians, indeed, claim to have improved on the Prussian field gun, so that now they have at their command—if they will bear the expense of the change—a field piece of extraordinary excellence. In fact we are told that the 8·7 centimetre steel cannon, made according to Austrian ideas, is superior to any field piece now in use. Whether this opinion would survive a contest between the Austrian model piece and a field gun of the Woolwich pattern we greatly doubt."

It is astounding to read the opening sentence of the above paragraph, at this moment when our own mechanics are racking their brains to find the means of loading guns inside the turrets, and to prevent the mischief which half neutralises the value of turrets and armor in the compulsory opening of the ports. Why, the inducements, so far from passing away, are becoming more pressing and forcible! Here we have pneumatic apparatuses, and cranks, and levers suggested, and all sorts of experiments going on because muzzle-loading present obvious impediments to complete safety As to "the statecraft" of frightening a nation out of its wits. about its artillery, in order to inveigle them into a change, we can only say it is not of the kind at all usual in Austria. It may be that there is nothing in the Steinfeld experiments to cause alarm in England, but if our contemporary will only take the pains to make himself acquainted with the facts as to the new German shell- and the military attachés have furnished useful details on the point—he will find that conjointly with the failure of the new shrapnel there is cause for a little less "insular arrogance" and confidence on this side of the Channel respecting the preeminence of our field ordnance,

VESSELS OF WAR.

Never before was the whole subject of marine warfare in such a muddle as it is now. When Louis Napoleon launched the *Gloire*, fifteen years ago, he opened a discussion which seems never likely to come to an end The European navies had settled down to what they supposed was a sort of "hard-pan" After more than a decade of talk and experiment they had finally got the screws fairly introduced, and the batteries were generally equipped with shell guns. The destruction of the Turkish fleet at Sinope by the Russian shell guns and time fuses, in the early part of the Crimean war, sent a shudder through the naval circles of Europe The alarm was as to the then existing power of naval batteries. If the small shell-guns of the Russian fleet did such swift execution, what would be likely to happen if ten inch shells were fired into one another's vessels? One or both of the antagonists must forthwith be sent to destruction. The standard authority on naval gunnery referred with horror to the awful power of this tremendous missile. It was the fearful anticipation, as much as the launching of the *Gloire* that gave birth to the iron clad era. That these anticipations were entirely justifiable the fearful carnage which the shells of the *Merrimac* in a few minutes inflicted on the *Cumberland* and *Congress* is abundant proof.

It was at this time, in 1861, that the *Monitor* made its appearance. England had already begun her iron clad navy, and had launched the *Warrior*, the *Black Prince*, the *Defence*, and another. The French had built a companion to the *Gloire*. The fight between the *Monitor* and *Merrimac* changed the whole aspect of things. Foreign powers saw that wooden ships had no show against shell guns in shot-proof vessels, and that we had been able to build within a hundred days a ship that solved the iron clad problem, and was capable of sinking any French or English wooden ship that might come against it. The fact, too, was apparent that a few months would give us a fleet of just such vessels. And in a few months we had the fleet. But we have made no attempt since the war to compete in ironclad construction with England and France or any of the European powers. We have practically ceased to place reliance on guns for the defence of our harbours. Our course now is plain. It is to attack an enemy below the water line—abandoning all devious attempts to overcome his armored sides—and thus to neutralise whatever advantage he may have obtained by colossal expenditures on iron clads.

The fact that attack below the water line by subaqueous weapons is destined to utterly revolutionize naval warfare would seem to be too plain to require labored demonstration; but undoubtedly another great war will be needed to convince naval authorities of it. England, France, Germany, and Russia vie with each other to produce an iron-clad absolutely impregnable to existing artillery. England has just put the monitor *Inflexible* on the stocks. She is to have twenty-four inches armor on her turrets, and is to carry guns firing shot weighing 1,600 pounds. Russia has launched the *Peter the Great*, and Germany follows with her *Frederick the Great*. Meanwhile, the naval writers of Europe are filling newspapers, magazines, and pamphlets with discussions and controversies as to the general character and powers of ironclads, and, strangely enough, naval officers are preparing elaborate treatises on naval tactics for the disposition of these monsters, as if they were to be handled and manœuvred as Von Moltke could an army corps on a smooth plain. Inasmuch as a few hundred pounds of nitroglycerine, or some other of the modern explosives, fired in contact with their unarmored sides below the water, would send the strongest of these naval giants to Davy Jones' locker before even the simplest of "naval tactics" could be put into operation, we must regard the work of these industrious tacticians as thrown away.

The inability of the naval specialists to appreciate the situation, and the consequent muddle that exists throughout Europe as to models of vessels, the character of armor, the purposes to which naval vessels may be put, and the methods of naval warfare, are indications of the coming revolution. To show the extreme to which they go, we find little kingdoms like Sweden and Norway building an insignificant number of broadside ironclads, thus feebly following in the wake of Russia and Germany. Of course, these vessels are of no use to such a power for offensive purposes, and as for defensive purposes they are worthless, and their whole construction is simply a frivolous waste of money, prompted by vanity and foolish attempt at rivalry. It is hard for the naval minds to understand that the old ideas of naval power are fast approaching an end. A clear observer, informed as to the situation, must recognize the fact that twenty five years from now a navy will exist only as a means of defence for the great nations. The vast sums that are spent every year in maintaining and increasing the navies of Europe on their present system may, therefore, be regarded as practically thrown away. The comparatively inexpensive submarine monster, applied to defensive uses, will neutralize all the millions that are now wasted on enormous naval constructions.

MUZZLE RIFLING.

(From the Army and Navy Journal.)

We have received from Quartermaster General Meigs, in the form of "Ordnance Notes No. XXIX.," a paper of exceeding interest as affecting one of the great military questions of the day—rifle practice. It seems that considerable excitement and interest have been aroused in English circles by a reported revolution in the whole system of rifling, denominated "Muzzle rifling." This change had its origin in the brian, not of a gun maker or ordnance officer, but that of Mr. W. Murphy, a distiller, of Richmond, County Cork, Ireland. His invention had an exceptional character. The peculiarity consisted in rifling, with inclined rifling only a comparatively small portion of the bore towards or at the muzzle, the rifling, being dispensed with in a large portion of the bore in front of the seat of shot, where it has hitherto been an impediment to the initial motion of the projectile, and consequently a cause of recoil. The peculiarity and novelty of the system were in some measure in confining the rifling, not only to that portion of the bore where alone (as sought to be proved) rifling can be necessary, but to the very portion of it which has hitherto been considered the weakest; where, in fact, we have been taught to believe that any impediment to the free exit of the bullet would involve the destruction of the arm. The patentee claimed for his system the following advantages: First, a great reduction of recoil, without any reduction of charge or increase in the weight of the arm. Secondly, increased velocity of projectile, and consequent flatness of trajectory, without any loss of accuracy of direction. Thirdly, from the position of the rifling, facility for punching, drawing, or cutting, and accurately gauging the same; and, though last, not least, a very considerable reduction in the cost of manufacture, with more exact evenness of pitch and form of rifling, consequent mainly on the small portion of the bore that will be rifled. Mr. Murphy contended that the fact of the surface of the projectile having to travel along the incline of the rifling towards or near the muzzle retards only slightly, without unduly checking, the velocity at that point, and that in consequence a large quantity of the powder charge is consumed, and a somewhat greater power is thus finally applied to expel the projectile from the bore than with the ordinary rifle. In the case of this latter, the increasing velocity of the projectile is unimpeded, save by the column of air in the barrel, until it escapes from the muzzle, except when increasing pitch is used.

Captains O'Hea and Selwyn, R. N., and Commander Dawson, R. N., together with Mr. W. Walker, in a discussion before the English Society of Arts, explained the immense advantages accruing from the invention, and described numerous experiments which proved to them that the invention would reduce the cost of rifling, increase accuracy, diminish recoil, and completely revolutionize rifle practice. General Meigs was so much impressed by the results claimed and the "statements of officers of reputation, which I could not believe to be false, fraudulent, or mistaken," that he addressed a letter to the Secretary of War, recommending that "consulting the paper published in No. LXXII. of *The Journal of the British United Service Institution*, exhaustive experiments be instituted upon muzzle loading rifling; upon the form of section of barrel, whether grooved or ribbed, which should be adopted; upon the least rapidity of twist which will be sufficient to secure the ball uniformly striking point foremost at 1,000 or 1,000 yards range, and upon the proportion of powder to lead in the cartridge. These experiments will not cost much either in time, labor, or money, and I believe they will lead to great change and a great improvement in the rifled arms of the United States."

These experiments have been conducted at the National Armory, Springfield, Mass., with results that show how much circumstances alter cases, and that we need not be afraid to put our American guns besides the Maritini Henry, whether wholly or in part rifled on the Englished system,

We give the results of the experiments, the details being too long for present publication, but remarking that they are fully borne out by numerous and exhaustive trials. Major Benton, commanding the armory, reports that: "as regards the superiority of part rifling over full rifling, the experiments made by me have been for the purpose of comparing the merits of part rifling on the Henry plan with the full rifling of the present Springfield system. From the report of these experiments, I think it will be seen that the part rifling system on the Henry plan, while it sometimes give excellent results, does not always do so, and is, on the whole, inferior to the present Springfield system of full rifling. The special advantage claimed for part rifling, viz., greater flatness of trajectoy, is not confirmed by the experiments when compared to the present Springfield mode of rifling. As regards cost of construction, the part rifling on the Henry system is more expensive than the full rifling on the Springfield system, inasmuch as the additional operation of reaming out costs not only more than the difference from the length of rifling, but more than rifling the full length of the barrel."

He further reports, on the claim that a twist of twenty two inches is too great for our .45 calibre rifle, and on the proposal that trials be made with barrels of four and six feet twists. It was also proposed to increase the charge of powder and reduce the weight of the bullet so as to get increased velocity. Both of these suggestions have now been tried and have failed to give satisfactory results, owing to very great falling off in accuracy of fire. The 300-grain bullets, which were fired with 90 grains of powder, were lightened by shortening the 405 grain bullet. The mode of lightening by hollowing the chamber and filling the cavity with a plug of wood, would hardly be applicable to projectiles of this calibre. It is employed in England only for the Snider bullet, which has a calibre of nearly .58.

Major Benton, in his further report, sums up the results of his experiments thus:

I. Regarding accuracy of fire at 300 and 500 yards range, with ammunition prepared at this armory, there is little, if any, difference between the Springfield full rifled barrel and the two Henry part rifled barrels with 22 twist. With service cartridges, as received from the Frankford Arsenal, the accuracy of fire is decidedly in favor of the Springfield barrel. I attribute this disparity mainly to the difference in the lubricants employed. The Frankford lubricant, being pure Japan wax, is not so perfect in its operation and does not lubricate the bore near the muzzle so thoroughly as that used here, which is composed of beeswax, sperm oil, and graphite. The part rifling after a few rounds was observed to be entirely covered with dirt, whereas but a portion of the full rifling was so covered, and the lands had necessarily a better hold on the bullet than in the former case. II. As regards flatness of trajectory, as shown by the position of the centre of impact for the same angle of fire, there seems to be little difference between the Springfield barrel and the Henry part rifled barrel. For some reason, which I cannot explain, the drop of the bullet from the Henry part rifled barrel was much greater at all distances than from the other two barrels, and, therefore, had a higher trajectory. A careful inspection of No. 7 barrel was made, and no difference could be detected between it and barrel No. 2. The English experiments, to which General Meigs refers, were made to compare full and part rifled barrels on the Henry (ribbed) system of rifling, and are not therefore, perfectly analogous to the experiments referred to in this report, which were made to compare the merits of the Henry part rifle with the Springfield full rifle systems. I can only say that, so far as the experiments, made at this armory go, they do not confirm the results of the English experiments, which showed that part rifling gave a much flatter trajectory than full rifling. III. The firing from Henry part rifled barrels, with four foot and six foot twist, was very wild at 500 yards. As the target was frequently missed, no record is given of the firing with these guns. Frankford service cartridges prepared at this armory with 90 grains of powder and bullets weighing 300 grains. IV. The results for recoil (table No. 11) show rather less pressure for the full rifled Springfield gun than for the Henry part rifled barrels Nos. 2. 7. and 5, Barrel No. 5, with six foot twist, gave somewhat greater pressure than the others. The pressure from a charge of 90 grains of powder and 300 of lead is also a little more than for charges of 70 grains of powder and 405 of lead, V. The initial velocities obtained with the Henry part rifled barrel (No. 2 and No. 4) are a little greater and more uniform than that with the full rifled Springfield barrel, while the Henry part rifled barrel (No. 7) was about equal to the latter in both respects. The conclusion from the foregoing is that no advantage is

to be derived from the adoption of part rifling in place of full rifling for our present service arms and ammunition. The present system of full rifling gives very good and uniform results, with even considerable variation in the manufacture of the arms and ammunition. This fact is not only established by the experiments herein referred to, but by extended experiments made at this armory and the Frankford Arsenal for several years past. Part rifled barrels sometimes give very good results, but slight defects in the construction of the barrel and the quality of the ammunition impair, and sometimes totally destroy, accuaracy of fire. Twists of one turn in four feet and one turn in six feet do not give, with part rifling, sufficient rotation of the bullet to insure its hitting a target twelve feet square at a distance of 500 yards. This was found to be true both for charges of 70 grains of powder and 405 of lead and 90 grains of powder and 300 of lead. The statement that part rifling is cheaper to make than full rifling may be true as regards the Henry system and the rifling machinery in use in England, but it is not so with the system of rifling and machinery employed at this armory. The cost of full rifling a barrel at this place is four and one half cents. The extra operation of reaming out the barrel to within four inches of the muzzle, required in part rifling, costs six and one half cents per barrel, making the cost of part rifling over full rifling about two cents per barrel When on a visit to the small arms factory at Enfield, England, last summer, I was informed by Col. Frazer, the superintendent, that it required one workman for a day of nine hours to rifle ten barrels on the Henry plan at that establishment. Paying the workmen the same wages allowed here for a day of eight hours would make the cost of rifling at Enfield between thirty and forty cents per barrel. It may, therefore, be true, as stated in the reports referred to by General Meigs, that part rifling is cheaper than full rifling, as done in England.

We join with General Meigs, when he says of these experiments. "They go far to settle so no vexed and important questions, and having been made with the accuracy and care which distinguish the work of our Ordnance Corps, they will be a valuble contribution to science."

AN EIGHTY TON GUN.

The London *Standard* says: "It may not be generally known that the principle upon which all our guns are now made is that discovered by Colonel Fraser. Briefly, it consists of a series of coils, welded together in such a way that the grain of the iron is best opposed to the explosive force of the powder, and encircling a steel tube, the interior of which is rifled. A long bar of iron —say of eight inches square—previously prepared, is slowly drawn from a furnace, to a length of about 300 feet, and wound into a double coil in the form of a cylinder. This is again heated and placed beneath a steam hammer, where it is welded together by tremendous blows, which so effectually do their work that a cylinder capable of bearing the greatest possible strain is formed at a comparatively trifling expense. Several of these coils being made, they are placed in order upon a long steel tube which has been made in Sheffield, and the weapon is finally turned out at an average cost of about £60 a ton, as against nearly £150 at Krupp's factory in Essen. Upon this principle, then, it was resolved to construct an eighty ton gun, which should be able to pierce twenty inches of iron at a distance of a thousand yards, with a shot 1,600 pounds in weight, and by the aid of 300 pounds of powder. The length of this magnificent piece of artillery was fixed at twenty seven feet, its diameter at the trunnion six feet, and at the muzzle sixteen inches, inside measurement. It was calculated that such a gun would be able to deliver its mischief working missile at a distance of nearly ten miles, and that it would, at the same time, be easily placed in the turret of a war ship or the embrasure of a battery, and worked quickly and without difficulty. Of course there were many difficulties in the way of the construction of such a weapon. No steam hammer such as that which Krupp possesses at Essen was to be found in England; no forges were built large enough for such a tremendous "heat;" no cranes were in possession to hoist such a weight. But all these difficulties were speedily overcome by the skillful officials at Woolwich. The forges were built, a huge steam hammer of forty tons weight, with double action arrangement and a striking power of nearly 1,000 tons made, and very soon all was in readiness to begin the construction of the great gun. Curiously enough his Majesty the Emperor of Russia was the first to see one of its coils welded and since that time the work has been gradually going on, till now the steel tube, the breech piece, the coil, and the trunnion are finished; so that it is certain that by June next the gun will be ready for trial. It will then consist of the following: A tough steel tube inside, weighing nearly sixteen tons, and measuring about twenty four feet in length; a breech piece coil, another coil nearer to the muzzle, and the trunnion coil. The cascabel through which the fire from the friction tube is communicated to the cartridge inside the gun is of steel, and immensely strong. Such is the weapon upon which hopes of a victory over twenty inch armour plates are built. If it should succeed, three more will be made immediately, and the four pieces placed on board the *Inflexible*, which will then be the most powerful armed vessel in the world. Possibly, at the same time, some addition may be made to her arm, so that she may be as invulnerable as she is terrible.

HOW TWO PERSONS LOST THEIR LIVES.

Coroner Reinhardt last night began an inquest in Kinney's Hall, Jersey City Heights, over the bodies of Elisha Harvey and John Horne, who were killed by the explosion of blasting materials at the new Delaware, Lackawanna and Western Railroad tunnel on Wednesday night. John Farrell testified that he was employed about 100 feet from the place at the time of the explosion. He found the boy's body and extinguished the fire, which had caught in his clothing, and also found Harvey's body, the latter being very near the shop. An explosion had occurred at the same place on the previous Monday, and Harvey, the blacksmith, had said they were experimenting. Farrell had inspected the shop on the evening of the accident, and had seen a box of cartridges lying on one side of the building. It was usual to warm the cartridges before using them. Some of them were of ordinary black powder, and some of the Rendrock powder. The latter were considered safer. Warren powder had sometimes been used, but no giant powder had been used in the last six months.

M. C. Brown, superintendent of the mining department, testified to having examined the shop shortly before the explosion, but noticed nothing unusual. The powder was not dangerously near the fire. He had given all the men the most positive orders not to tramper with the cartridges. The powder was the best that could be procured. The caps were kept separate from the cartridges, and Mr. Brown believed that the concussion could not have been strong enough to blow up the shop had not caps been affixed by whoever was handling them.

T. O. Beach of New York testified that he made Rendrock powder, and that it was not explosive without the caps. His factory had burned with a ton of powder in it, and there had been no explosion. He showed the non explosive nature of the powder with a coal shovel.

Capt. W. H. Heuer, resident engineer at Hell Gate, testified to the non-explosive qualities of the powder without the cap.

ALACE AND LOCRAINE.

BERLIN, Nov. 30.—In the Reichstag to day the Alsace Lorraine Loan bill was taken up, and gave rise to a most interesting debate. The Deputies from Alsace and Lorraine declared that they were opposed to the high endowment of the University of Strassburg, and to other educational grants for the provinces, because they were made in the interest of the Empire and not of the provinces themselves.

This called out Prince Bismarck, who replied as follows:

The question before us concerns imperial interests. It is not a question of Alsace and Lorraine. The University is for imperial purposes. In a well fought war, in which we defended our existence, we conquered those provinces for the Empire. It was not for Alsace and Lorraine our soldiers shed their blood. We take our stand upon imperial interests, for which, and not for the sake of their own ecclesiastical interests, we annexed those provinces. We have other grounds for action than those people whose past leads to Paris and whose present leads to Rome.

My own views respecting the creation of an Alsace and Lorraine Parliament, which at first were too sanguine, have been modified since I became acquainted with the attitude of the Deputies from those provinces. Such a parliament would lead to continual agitation and perhaps might endanger the peace of the Empire. We shall doubtless be obliged to take still more rigorous steps in regard to school matters there.

We cannot permit the existence of elements which strive to hinder education. My action is guided by imperial interest. I shall not be frightened from my course by reproaches, threats, or persuasion. Before advance is possible, we must be convinced of the existence of trustworthy elements. We may expect a better discernment in the rising generation, and must, therefore, see that good schools are provided for Alsace and Lorraine.

At the conclusion of the debate the Loan bill was referred to a committee.

The bill to carry into effect the provisions of the Berne Postal Convention passed its third reading.

Herr Sigl, editor of the *Vaterland*, has been sentenced *in contumaciam* to ten months imprisonment for asserting that Kullmann's attempt on the life of Prince Bismarck was a sham plot concocted by the police.

FRANCE.

PARIS, Nov. 30.—Political parties have been busily preparing for the opening of the Assembly. Numerous caucuses have been held, and negotiations are going on between the various sections of the Assembly. What combinations have been made it is impossible as yet to determine. The many rumors in circulation render the situation indefinite. The fractions of the Right appear to be still unable to combine. Seventy deputies of the Extreme Right have resolved to vote against the Consitutional bills.

The Count de Chambord has written a letter to his supporters in the Assembly, in which he says: "Confiding to the zeal of my friends to do everything to further the interests of the country and the cause of royalty, I will offer no advice But the true royalist must do nothing liable to delay the restoration of the monarchy." This letter has been communicated to the members of the Moderate Right, who intended to vote for the Constitutional bills, and may shake their purpose.

The passage of a constituent measure now depends on the attitude of the Right Centre. The Left is firmly united, and will bring no motion forward which might cause the differing sections of the Right to draw together again.

VERSAILLES, Nov. 40 —The Assembly met this afternoon, and held a very brief sitting. The attendance was light, and nothing of importance occurred. M. Thiers was present, and conversed with Gen. Cissey. Five bills relating to the organization of the army cadres and staff were submitted by the Minister of War and referred to the Committee on the Army.

RIFLE SHOOTING BEFORE THE ENEMY AND BEFORE THE TARGET.

[From the Volunteer News.]

An American Volunteer officer—"J.F.E." in some notes to the *New York Times*, occasioned by the very remarkable sharp-shooting of the Irish and American marksmen at Creedmoor, recalls to mind some notable instances of practice with small-arms by our Volunteers during the rebellion. They are narrated, not, he says, as illustrating any large degree of skill in the use of the rifle by our soldiers in time of war, but as indicating the average effect of the rifled musket in the hand of the Volunteer soldier.

One of the captains of my regiments (114th New York) was fond of telling a strange experience of one of the privates of his company when he served in the Ellsworth Regiment—the 44th New York. The man was a soldier, who was as green as a soldier well can be; he had never before been in action, nor even heard a shot fired in enmity. The occasion was during the Peninsular campaign—at Williamburg, I think—when this soldier was suddenly precipitated into action. While loading and firing in the most determined and nonchalant way, he met with an experience which is not at all uncommon to new soldiers—he fired off his ramrod. Advancing with his detachment at the close of the contest, and passing over the ground which had been occupied by the Confederates, he found one of the latter literally pinned to a tree with a ramrod, stone dead. He always thought, and with good reason, that this casualty was caused by his own inadvertence in making ammunition of his ramrod

The situation at Port Hudson for a month or five weeks following the 1st day of June, 1863, was peculiar and exciting. Each of the armies lay perfectly sheltered in its rifle pits, or behind the slopes of the hills, and on either side, along the eccentric course of the ravine which separated the hills behind which the combatants were intrenched, they lay in the rifle pits, rifle in hand, ready to fire at the least indication of life or motion opposite. In places these rifle pits were separated from each other on different sides by, perhaps, a width of 300 yards and although it would not be thought much of at Creedmoor, yet we used to think it fair shooting when one of our men was killed or wounded by a bullet entering the little aperture, not more than an inch and a half square, in the log which capped the earthworks, and which was cut for the purpose of protruding our muskets and taking sight. I recall one most curious instance of the effect of the Confederate sharp shooting at Port Hudson at this time. On one moonlight night a detail from my company was manning the rifle pit in our front. Shots had been exchanged during the evening between this detachment and that of the Confederate opposite, so that the general position of each party was known. One of the soldiers of my company had just advanced his musket through the loop hole, and with his eye one the sights, was waiting for some auspicious appearance, or some movement on the other side, to fire at. It must have been that some Confederate, just opposite, similarly engaged, caught the gleam of the moonlight on the well polished barrel of Chappell's musket and fired at it. Certain it was that a bullet from the enemy's rifle pits entered the loop whole behind which Chappell was watching, coursed along down his gun barrel, severing both hands, and passed through the palm of his hand. This was of course, no chance shot; and the stories of remarkable rifle shot wounds which we heard from the Confederates after they had yield Port Hudson to us inclined me to think that our fire was not less accurate than that of the enemy. Indeed, two armies practicing at each other for a series of days or weeks from covered rifle pits gain an accuracy at a range something less than 1000 yards which our accomplished marksmen of Creedmoor might not be ashamed of. The casualties on either side at Vicksburk or Port Hudson, if collected and reduced to an average, would show an astonishing proficiency in accuracy of rifle practice, especially when it is remembered that both sides were generally armed with no better weapon than the Springfield or Enfield rifled musket—either one a very good arm, to be sure, but not capable of fine shooting at long range.

And yet it is wonderful to recall what was accomplished by the soldiers on both sides with these arms during the rebellion. Perhaps the best illustration of the possibility of terrible execution with them, at a range of nearly 200 yards, is afforded in Sheridan's Battle of Winchester, September 29 1864, which, it will be remembered, resulted in the breaking up and flight of Early's army up the Shenandoah Valley. Speaking now of the contest on the right of our line, where 114th, the 116th, and 153rd New York "went in" and stubbornly held their position against the enemy during the long hours of that beautiful autumn afternoon—so beautiful that not all the smoke from the cannon or musketry could obscure the brightness of the sun—I may describe it as a battle waged with the rifled musket, at the distance mentioned, and waged with a stubbornness and resistency that made the result sanguinary in the extreme. These and other regiments, coming upon the line at double quick opened a rapid file fire, the men standing upright as they loaded and fired. But at short range no troops will stand long before a hostile fire, and the casualties in our ranks soon compelled our men to prostrate themselves on the ground; and the battle was fought out by both armies hugging the ground as closely as possible. Good people who effect to smile at the "ridiculous" postures of the riflemen at Creedmoor, lying on their backs, their bellies, and their sides, may be assured that these gentlemen only follow the practice of skirmishers and soldiers on line of battle at short range, in time of war. I am speaking now of the battle of Winchester, because it affords the best illustration within my experience of deadly and effective fire of small arms during the war. No doubt a dozen other like instances could be named. As the fire of the enemy grew intolerably fatal, our line dropped to the ground, and there loaded and fired. Some loaded on their backs and turned over to fire; some loaded on the side, and fired lying on the belly; some fired from the knee, but very few stood upright, even to fire. Yet it is almost incredible to believe the havoc that was made upon this line during that afternoon. Out of 350 present, rank and file, the 114th New York lost 188, or more than one half. We had in front of us Kershaw's division, all veterans of three year' standing, and we, on our side, were well seasoned in point of time. The bullets of the enemy did not pass over head; they hissed through the long grass, searching out their victims with deadly accuracy. Men were killed by my side as they lay prone on their faces, the ball striking them in the head or breast, and so persistent was the low range of the fire that the dry grass in front of us was set on fire by the enemy's cartridges, and burned during a good part of the afternoon. I was anxious to discover whether the fire of our line delivered by the men on their backs, on their faces, and, as I actually saw in one instance, from behind the body of a fallen comrade, had produced a like deatly effect to that of the Confederates. The appearance of the ground in our immediate front, as we passed over it about five o'clock, strewn with grey-coated bodies, might have answered in the affirmative; but I had direct evidence on the subject a few days afterwards from a wounded soldier of Kershaw's division at Strasbourg.

"We were opposite the 19th corps at Winchester," he said, "and though I have been in the Confederate service for three years, I never saw such a slaughter before. The men fell right and left; they were struck down so fast that I could hardly believe they were really knocked over, but thought, very wrongly, that they were shamming."

I'm not, of course, suggesting the difference between shooting at targets at Creedmoor, and at men on the battle field. But I cannot help remarking about the positions for firing assumed by the marksmen at Creedmoor, that it would be no easy task for any of them to invent a position that was not used, either in skirmish or battle, by our Volunteers during the war. And while I say this, I yield profound admiration for the marksmanship displayed at Creedmoor by both natives and foreigners.

The steamer *Viking* spoke the direct Cable Company's steamers *Faraday* and *Ambassador* on the 25th ult. in lat. 49th north, long. 44 west. All was progressing well.

CONTENTS OF No. 48, VOL. VIII.

The Volunteer Review,
AND
MILITARY AND NAVAL GAZETTE

"Unbribed, unbought, our swords we draw,
To guard the Monarch, fence the Law."

OTTAWA, TUESDAY, DEC. 8, 1874.

TO CORRESPONDENTS.—Letters addressed to either the Editor or Publisher, as well as Communications intended for publication, must, invariably, be *pre-paid*. Correspondents will also bear in mind that one end of the envelope should be left open, and at the corner the words "Printer's copy" written and a two or five cent stamp (according to the weight of the communication) placed thereon will pay the postage.

☞ LIEUT. J. B. VINTER, of Victoria, is our authorised Agent for Vancouver Island, British Columbia. As is also Captain H. V. EDMONDS for New Westminster and adjacent country.

THE New York *Times* of 5th November has an article on "Vessels of War," which will be found in another page. Our contemporary has embraced the popular delusion that *torpedoes* have effected a revolution in the art of war, and that in future navies are needless or comparatively so. Our contemporary, the United States *Army and Navy Journal* of November 14th, has the following on this head, showing the difference between the views of the mere commercial representative and the exponents of the educated military experts.

"A correspondent of a London paper follows the lead of writers in other English journals, in blaming the Government for allowing foreign experts "to become acquainted with the extreme limit to which this (that) country has advanced in the production and manipulation of destructive agencies," that is, its method of submarine defence. We can assure our English friends, however, that for our part we have learned nothing novel in that direction from them. Our own engineer at Willet's Point keep a veil of obscurity over their experiments, but as the method of fixed submarine defences is very simple, and the manner of electrical firing within the ingenuity of any expert in the science, we do not see in the great necessity for the secrecy, nor believe that when it is removed it will be found that novelties of essential value are revealed. The whole of the question of fixed submarine defences consists in anchoring vessels containing explosives in a channel, and firing them by electricity. The circuit can be made in two ways, either by the contact of a vessel with a buoy above the torpedo, or by the act of an observer on shore. Of course, within these limits there was room enough for variety of detail and opportunity, for ingenuity and experiment. But the exhaustive experiments on the continent of Europe, particularly those carried on the Ij in Holland, left next to nothing to be found out in that direction. The experiments with the *Oberon* had a value, but nothing could have been gained to England by keeping them secret. They proved that these fixed submarine defences are a very fragile reed to lean on in undertaking the defence of harbors. Even if kept in perfect order they are far from reliable, but when one considers the perplexity of their details, their liability to fail when most needed, the chances of the explosion of one setting off many others, and so opening a free roadway for ships, the opportunity for an enterprising enemy to break the network of their electrical attachments by means capable of being devised—when all these things are borne in mind, no prudent man entrusted with the defence of a harbor like New York, knowing the resources of a first class naval foe, would think of putting his reliance upon such contrivances. As we have often contended, and as every experiment so far made shows, the submarine weapon must be moveable, capable of being directed against the enemy, and not obliged to lie in wait for the chance of his getting above it, with the further chances of its not hurting him even then. It was shown in the case of the *Oberon* that a torpedo anchored within fifty feet containing a charge of 500lbs. of gun cotton, estimated to be equal to 2,000lbs. of gunpowder, was exploded without harm to the ship further than the bulging in of two or three plates, the live stock aboard being found immediately after eating their fodder as if nothing had happened."

Our military contemporary is undoubtedly right; for this *torpedo* question just amounts to this: that the advocates of that weapon must produce or show the possibility of producing an *automatic* machine capable of being manœuvred *under water* against an ironclad or heavily armored wooden vessel at the farthest range of modern artillery — qually in a seaway, a current, or a calm. With the range of modern artillery New York could be bombarded at a distance of five miles, its defence should begin at that point, and supposing it could be made good will *torpedoes* break a blockage? It is well known that unrestrained circulation is the life of commerce, any event that would close the harbor of New York or any city like it for a single week, would be the death of that life. Not only therefore must a commercial city have the means of defence but it must have the means of keeping an enemy at a distance; and the mercantile organ that indulges in misleading rhapsodies on the power of a scientific play toy, is not serving the interest about which it displays so much solicitude.

It has often been a subject of amusement to the writer to study the moods of *commercial journals in England and the United States* during any political commotion—such as the Alabama claims, &c. On the one side, anxiety lest a power confessedly unable to guard her own comercial interests should suddenly appear like Minerva armed to the teeth in a *role* which she has never yet been able to sustain as a first class naval power; on the other hand, the bullying confidence of the Press of a country the ports of whose greatest emporiums could be hermetically sealed by a couple of heavily armed vessels.

The fact is that if the United States would maintain an efficient naval force, keep from meddling in foreign intrigues and attend to her own development, she could easily occupy a position not inferior to that of Great Britain in the economy of nations. But like all countries possessing free representative institutions she is under the control of the peace-at-any-price party, and her Statesmen and soldiers must submit to ceremonial exigencies.

If the Tuetons ever become a strong naval power, a new illustration of SOLON'S remark to CROESUS will be sure to occur: "All this gold will belong to the man who possesses more iron."

As the VOLUNTEER REVIEW has paid considerable attention to the history and development of "torpedoes," and as nothing has yet occurred to alter the conviction of their inapplicability for any other purpose than as a very limited auxiliary weapon, we have been careful to note every circumstance connected with the progress of experiments publicly carried on, for the purpose of showing our readers that the opinion expressed at the onset had something more than mere guesswork to warrant its expression. The United States *Army and Navy Journal* of November 7th directs its leading article to the subject of "Moveable Torpedoes," and we copy it in another column. It will be seen that not one of the objections we raised to the value of the weapon has been satisfactorily met, it cannot be used in a sea way nor in an harbor except the water is smooth and without currents, and it may be asked where do those conditions exist?

Some of the most valuable experiments on record have been reported by our contemporary, and the following letter from its issue of 31st inst. is not the least important additions which have been made to military science by the officers of the United States Army and Navy:—

Editor of the Army and Navy Journal.

SIR: In naval circles there has been much interest felt to learn the results of the experiments with stationary torpedoes against the *Oberon*. The very clear statement, on this subject, in your issue of the Journal, has been read with much satisfaction by those interested in such matters. These results do not differ much from those obtained in 1863, by some rude experiments made by the commander of one of our gunboats stationed in the James River, and which, at the time, proved to be very valuable, giving confidence to those employed in clearing the channel of these obstacles to naval operations. This intelligent officer, seeing on shore, near one of the camps, a lot of empty mustard bottles, took possession of them, and tying a rope-yarn to the neck of one, attaching others to the same yarn, placing them about a foot apart, until a string, long enough for the purpose desired, was completed. The centre of this line, the bottles acting as floats, was placed directly over a large torpedo, which was then exploded, and the distance measured from the centre to the points, on each side, where the bottles and connecting yarn remained unbroken. The results in repeated experiments, were uniform, and may be briefly stated to be as follows:—At whatever depth the torpedoes were exploded, no bottles were broken at a distance from the centre, greater than the depth of water at the place where the torpedoes were sunk. It was thus shown that, in five fathoms of water for instance, an object on the surface, thirty feet distant from a point directly over a torpedo of the usual dimensions, would suffer no injury from its explosion.

The shape and relative proportions of the ascending column of water, might be compared to that of an ordinary ten inch mortar the bore perpendicular to the surface.

In the last *Oberon* experiment, the torpedo was placed in 48 feet of water, and the vessel 50 feet from it. B.

IN Volume VII. pages 296, 306, of the VOLUNTEER REVIEW our readers will find a synopsis of a paper read by Captain J. B. O'HEA, late of the 25th King's Own Borderers on "Rifles and Riding," in which the results of a series of experiments extending over ten years are detailed with a *system of rifling* invented by WM. MURRAY, Esq., of Richmond, Cork, in the Kingdom of Ireland. As will be recollected, Captain O'HEA claimed for this invention advantages which it undoubtedly possesses of high velocity and flatness of trajectory, qualities which eminently fit it to become the military weapon *par excellence* of the age.

It would appear that the attention of the United States authorities have been directed to this system by that gallant and talented officer Quarter Master General MEIGS, and a series of experiments have been carried out at the National Armory, Springfield Massachusetts, by Major BENTON, U. S. Army, the results of which will be seen in an article copied from the United States *Army and Navy Journal* in another column entitled "Muzzle Rifling," and those are directly opposed to the conclusions arrived at by Captain O'HEA. We do not cast the slightest reflection on the manner in which those experiments have been conducted at Springfield, but it would be desirable in the interest of military science that a farther and more protracted trial under circumstances that would leave condition or detail untried should be undertaken. There can be no doubt that the principles, mechanical and theoretical on which Mr. MURRAY'S system of rifling is founded are correct, that they solve not only the problems of the least and simplest form of small arms, but their application to heavy ordnance is only a question of time, to be measured by the increasing inapplicability of muzzle loading to the monster artillery of the day. There must be something wrong in the mode of manipulating the weapon in the late trial, men like Captains SELWYN and DAWSON, R.N., both famous as marine artillery officers, are not likely to be deceived in the value of an invention so closely connected with their art, and it is hard to conceive that Major BENTON could make any mistake, but the whole thing may lie in the *nut shell* of misapprehension. Meantime it is becoming every day more notorious that "whole rifling" on any known system involves mechanical problems which it is impossible to solve, because as Captain O'HEA puts it the agent that imparts the modern power to the projectile is entirely out of intelligent control.

It is not necessary to enter further into this question, the pages of the VOLUNTEER REVIEW are full of information on the subject as well as of the description of the various systems, and to them we refer our readers, but we hope further enquiry will be made into this subject.

WE direct attention to the advertisement of the *Aldine* Company's New Publications, which will be found in our advertising columns of today. All of these Publications are of first class, neither expense nor labor being spared on them. Besides they are remarkably cheap, when the quantity and quality is taken into account. We advise our readers to send for single copies, and after a perusal of their contents, they are sure to send for the rest.

"ATTENTION" is directed to the advertisement in our advertising columns of *The Sun*, Weekly and Daily for 1875 of New York. The daily issue of which is over 120,000. For general and reliable news, (its politics excepted) it is equal, if not far ahead of any of its contemporaries.

REVIEWS.

The Aldine for December comes to us in good time, and as usual freighted with all the good things of art and literature. This being the holiday or Christmas number of the year, it need scarcely be said that pictorially it fills the very sense of satisfaction. Four pictures of the seasons, "Spring," "Summer," "Autumn" and "Winter," each with a verse of illustration, present at once some of the most pregnant designing and the finest engraving and printing, to be found even in this high-class publication. The "Old Mill in the Jura Mountains," after C. E. Dubois, a young American artist of great promise, has a world of rugged strength and design, blended with careful and elaborate detail. Two charming pictures appropriate for the season, "Winter Pastimes," and "The First Lesson," tell pretty and interesting stories in a graceful manner, and the same may be said of "Caught!" which develops one of the dangers of the protrusive petticoat, and "The Rivals," which shows that there may be other jealousies than those beating under broadcloth or flounced silks. John S. Davis seems to have given us one of the most careful of his embodiments of a sad idea, in "Mary of the Wild Moor," the pictorial story of a well known tragic ballad; "Here's your Christmas Dinner!" is full of the softened lights and delicate shades of the old Flemish artists who so loved to depict market scenes; "The Zickenfall, Bohemia," opens to travellers a cascade of great beauty, little known in books, though deserving place among the most popular resorts; "What Keeps Him?" leads to a most painful doubt whether there can be any lover at once recreant enough and silly enough to keep the owner of that face and form waiting long enough even to ask the question; and the pictorial list is completed by a general and two interior views of "St. Asaph Cathedral, North Wales," keeping up *The Aldine's* speciality of portraying the great religious houses of England in rapid succession.

Literarily, this number opens with an oddly titled story, "My Christmas Revenge," bearing a name new to *The Aldine*, one Kitty Wing who may be matron or maid but who certainly tells a domestic tale very naively. "Lost Lilian Bracy," the serial story, rumoured to be a literary remain of G. P. R. James, increases in interest, and introduces a rare figure, in the new servant coming to Bracy's Hope, around whom may very possibly be woven more of the plot of the story than shows at the first glance. The number, from holiday reasons lacking a little in prose variety, is especially rich in poetry, Mrs. L. M. Blinn contributing a sweet little poem called "New Year Bells;" William H. Kernan a sadly strong one, with the chill title of "Winter and Sorrow;" Henry Morford a seasonable one, and odd as seasonable, "The Mistletoe in America;" and the illustrated old ballad, "Mary of the Wild Moor," coming back with mournful pleasure to many recollections.

The Aldine Company has determined to establish an Art Union, similar to the well known Art Union in England, and distribute its works of art, both sculpture and painting, which are constantly collecting, among its subscribers. Art premiums, valued at $2,500, will be distributed among each series of 500 subscribers. Subscription tickets at $6.00 each, entitle the holder to *The Aldine* for a year, to the new chromo and to a ticket in the distribution of art premiums. *The Aldine* Company, publishers No. 58 Maiden Lane, New York City.

The reprint of the November number of *Blackwood* has been sent us by The Leonard Scott Publishing Co., of 41 Barclay Street, New York. One of the principal articles, entitled "Modern Scientific Materialism," is a criticism upon Prof. Tyndall's late address to the British Association. The writer contend with much earnestness that Science should confine itself to its legitimate province of investigating the physical laws of the universe, and not indulge in vain speculations inconsistent with all ideas of spiritual worship. "The great conclusions of religion take their rise in a wholly different sphere, and find all their life and strength elsewhere."

"Valentine and his Brother. Part XI."—This instalment is a little tedious. We know that Richard Ross is a very selfish man, and would prefer a little more action to an analysis of the state of his mind, when so many recognitions are about to take place.

"The Abode of Snow. Part III."—The Valley of the Shadow of Death is the fitting name given to the valley of the Sutlej up which the narrative now leads us. Snowy peaks, precipitous slopes, gorges thousands of feet deep, present almost insurmountable obstables. The paths are only such in name. Sometimes the traveller is carried in a *dandy* which consists of a single bamboo nine or ten feet long, with two pieces of carpet slung to it. There are one or two bearers at each end of the pole, and the traveller rests on the carpet at right angles with the pole, a position which has peculiar disadvantages in a narrow pathway having a wall of rock on one side and a precipice on the other. Sometimes he rides on a *yak* or wild ox, with a man pulling at the nose-ring in front, and another prodding it behind with an alpenstock. Travelling on roads like those here described would test the endurance even of an Alpine tourist.

The other articles are, "Prussian Military Manœuvres," by Captain Knollys, of the Royal Artillery, who was present at a late review of the Emperor's Guard, and comments on various tactical errors and comes to the conclusion that the English army has little to learn from the Prussian; "Ancient Classics—Latin Literature," a summary of the characteristics of that literature, with some notices of the principal writers, and with many interesting extracts; and a review of Lord Dalling's Life of Lord Palmerston, in which the career of Lord Palmerston is treated in a friendly temper than is usual with a Tory reviewer.

The periodicals reprinted by The Leonard Scott Publishing Co., are as follows: *The London Quarterly, Edinburgh, Westminster,* and *British Quarterly Reviews,* and *Blackwood's Magazine.* Price, $1 a year for any one, or only $15 for all.

Experiments are ordered to be made at Eastbourne next month to try the new English siege train, which consists of 64-pndr guns of 64 cwt., 40-pounders of 35 cwt, and 8 inch howitzers of 46 cwt., and is called the most powerful siege train in the world. Batteries are to be erected, shelled, and demolished, to illustrate the effects of a siege.

It will probably be nearly a year before the 80 ton gun is finished at Woolwich, and ready for proof.

DEATH OF A VETERAN.

Lieutenant Colonel McDougall, died in this town, on Saturday, the 28th instant, aged 76 years.

In 1815, at the age of 17, he received his first commission in the 79th Highlanders, and reached Paris the day after the Battle of Waterloo, where he continued to serve during the occupation of France by the English. He continued to serve with the same regiment in almost all parts of the British possessions up to 1842, when he sold out. Previous to this he had been adjutant for many years, and subsequently received his commission as Captain.

After leaving the army he was appointed Inspector of Inland Revenue west of Hamilton. In 1855 at the commencement of the Volunteer movement he received the appointment of Inspecting Field Officer for Upper Canada, and after the death of Lieut. Colonel McDonell, Deputy Adjutant General, he acted in that capacity for about one year at Quebec. As the Militia Law of 1862 made no provision for Inspecting Field Officers, he subsequently accepted the appointment of District Paymaster, Militia District No. 4, which position he efficiently filled up to his death, having been identified with the service of Canada for forty two years, and with the Militia nineteen years. Thus ends the services of an efficient and faithful officer, whose death is regretted by a large circle of friends, and particularly by the Militia of No. 4 District, with which he has of late years been more particularly identified.—*Daily Recorder,* Nov. 30, 1874.

MASSACRE IN LABRADOR.

New York, November 28.

A letter was received in this city from the French Islands of St. Pierre, Mequelon, off the Southern coast of Newfoundland, dated Nov. 22. It gives the following particulars of a recent wholesale murder of white persons in a Labrador settlement by a party of Esquimaux Indians. The writer says: A terrible slaughter of human lives was perpetrated at the settlement of Indian Tickle, Labrador, on the night of the 15th inst., two whole families, with the exception of a young girl, being the victim. The names of the families are William J Morrison and his sons Thomas and Herbert, Robert Morrison and wife, and sons, William, Charles and James, their daughter Lizzie was the only one who has survived the catastrophe It seems that latterly gangs of Esquimaux Indians have been committing robberies at the huts and stores of the Morrison's, who held large stocks of goods; and that after the capture of several of the Indians they were publicly chastised by whipping. The revenge showed itself on the night of the 15th, when Mr. F. Morrison and his two sons were foully murdered in the room, their bodies being covered with dirk wounds, though they had been first wounded with bullets. Mrs. Morrison's throat was cut deeply in several places and a bullet pierced her brain. William and Charles Morrison were stabbed in the heart and also shot, but James, the youngest, seems to have struggled hard for his life, as his corpse was found on a staircase leading to a door, near the corpse of an Esquimaux, whom he had shot. This is the first instance of the troblesome conduct among the Esquimaux in Labrador in the memory of the oldest fishermen.

We have received from the publisher of the ALDINE their Chromos for 1875, to be presented to the subscribers of the ALDINE, entitled "Man's Unselfish Friend." It is a magnificent picture true to life. The ALDINE does well, both for its own prosperity and the good of its patrons; in executing and offering so exceptionally excellent a chromo to the patrons of its series for 1875; and, as we have already remarked, Mr. Townsend, the artist, in it makes rapid strides toward the head of living artists in that class of delineation.

It is understood that the original of this fine picture will be one of the many fine paintings held for distribution, through the new Art Union, to all subscribers for the ALDINE.

The subscription price is $6,00, which includes the ALDINE, one year, this Chromo, and one share in the Art Union distribution.

CORRESPONDENCE.

The Editor does not hold himself responsible for individual expressions of opinion in communications address to the VOLUNTEER REVIEW

(FROM OUR OWN CORRESPONDENT.)

On Saturday the 28th ultimo Lieut-Col Fletcher, C.M.G., Deputy Adjutant General of the 5th Military District, accompanied by Lieut Colonel Lovelace, Cavalry Staff, and Captain Atkinson G. T. Rifles, made his annual inspection of the Montreal Hussars commanded by Captain John Tees. On this occasion the handsome Standard presented in 1827 to the "Royal Montreal Cavalry" by the Earl of Dalhousie was paraded with the usual Standard escort. After the inspection Lieut. McArthur and Acting Sub-Lieut. Porter were called to the front and proved their efficiency by putting the troop through the sword exercise and several movements. Colonel Fletcher on the conclusion of the parade, congratulated Captain Tees on the fine appearance of the men, and the evident control they exercised over their horses in performing the different evolutions, paying also a well deserved compliment to Lieut. Colonel Lovelace, the officer instructor, who has held that position in the troop since its re-organization in 1856. This troop were reorganized at that period as the old "Royal Montreal Cavalry," and claim therefore the right to carry the Standard presented as aforesaid to that old trop first raised in Montreal as far back as 1812.

The following Cavalry Competition for Prizes given by Captain Tees took place, the umpires being Colonel Fletcher, Colone Lovelace, and Captain Atkinson.

FIRST COMPETITION.—For the best mounted troop practice at a gallop, 1st Prize Corpl McGinn, 2nd Prize Q. M. Sergt Cinnamon, 3rd Prize Sergt Major Cullen.

SECOND COMPETITION.—For the best dismounted Troop practice, 1st Prize Trooper Darling 2nd Prize Trooper Engelke.

THIRD COMPETITION.—For the best single stick Practice, 1st Prize Q. M. Cinnamon, 2nd Prize Trooper Gardner, the single stick practice was excellent, Q.M. Cinnamon having held his own against nine opponents.

DOMINION OF CANADA.

MILITIA GENERAL ORDERS.

HEAD QUARTERS,

Ottawa, 4th December, 1874.

GENERAL ORDERS (32).

ACTIVE MILITIA.

No. 1.

Artillery.

Lieut. Colonel Strange, Major in the Royal Artillery, has been already appointed an Inspector of Artillery and Warlike stores for the Dominion, but it is desirable his services in respect thereof should, until further orders, be confined, as heretofore, to the Province of Quebec, where his important duties as Commandant of "B" Battery, School of Gunnery, require his continual presence.

No. 2.

Major Irwin, Captain the Royal Artillery, is appointed temporarily an Assistant Inspector of Artillery and Warlike Stores for the Dominian—his services, in respect thereof, will, until further orders, be confined to the Province of Ontario, being likewise Commandant of "A" Battery, School of Gunnery, in that Province.

No. 3.

All requisitions for Battery and other Artillery Stores preferred by Commanding Officers of Artillery Corps will be transmitted, until further Orders, through the District Deputy Adjutants General to the above named Inspector and Assistant Inspector of Artillery, in the respective Provinces, for submission, with their departmental remarks to Head Quarters.

No. 4.

Boards of Survey.

In order to provide for the better efficiency of the Militia service in respect of Forts, Magazines, buildings and works at and about District Head Quarters, and of the Stores and Munitions of War in Militia Store charge in each Military District, as well as of all Ordnance, Ammunition and other stores, at Charlottetown, P. E. I., Halifax, N. S., St. John, N.B., Quebec, Montreal, Ottawa, Kingston, Toronto, London, Fort Garry, Man., and Victoria B.C., an inspection will, in future, be made during the month of January in each year.

The Boards of Survey in each District will be composed of the District Deputy Adjutant General and the Storekeeper. In the Province of Quebec the Officer exercising the duties of an Inspector of Artillery and Warlike Stores; in the Province of Ontario, the Officer appointed as Assistant Inspector of Artillery and Warlike Stores; and in Prince Edward Island, Manitoba, and British Columbia, the next senior officer of the Active Militia present at the station, will assist as members of the above Boards in their respective provinces.

Lieut. Colonel Jago, late Royal Artillery, will be so good as to assist as a member of the boards in Nova Scotia and New Brunswick.

The duties of the Boards willl be to ascertain the state and number of the Stores and Ammunition in possession of the Military Storekeeper as shewn, and borne on the District Store Ledger- the examination of all Military and other buildings in militia charge—and to make an inspection of the Ordnance, Ammunition, Warlike and other Stores and Munitions in possession of the Storekeeper, and of the Commandants of the Schools of Gunnery respectively. To report the state and condition of the Buildings, Stores and Works—to furnish a list of such Stores of every kind as the Board may consider obsolete or unserviceable, with a recommendation as to their disposal, together with a return of such articles, buildings, or other works as may require repair, and a statement as to the nature and extent of the repairs considered necessary.

The Boards of Survey will be guided by the special directions attached to War-office letter of 7th November, 1859, as far as they can be applied to the militia service of Canada, especially those relating to the Artillery branch, and Nos. 1, 3 and 5 Military Store branch.

The Deputy Adjutants General of the several Districts will communicate with the respective officers appointed to form these Boards with a view to fixing the most convenient day of assembly.

No. 5.

The Officer Commanding the Detachment of "B." Battery on St. Helen's Island, will exercise his men in the use of the Fire Engine one day in each month, reporting the result to the Officer Commanding the Battery.

No. 6.

The sum of twenty dollars each per annum, has been authorized to assist the men's Library and Reading Rooms of "A" and "B" Batteries, Schools of Gunnery. Such allowance to commence with the current financial year.

No. 7.

Referring to General Orders (13) 2nd June 1874, paragraph No. 4. The preamble of the Order in par. No. 1, explains why it was necessary to diminish the number of Active Militia to be drilled this year, 1874 75, and it must be understood the reason for selecting the Grand Trunk Brigade for exemption from annul drill was owing to its strength and its general efficiency being such as to enable its drill this year, being dispensed with.

The Major General has no doubt of the thorough efficiency of the Brigade from the opinion he was enabled to form when inspecting their excellent armouries.

No. 8.

Referring to paragraph 10 of General Orders (14) 3rd June, 1874, Deputy Adjutants General will send to Head Quarters without delay, their reports relating to the Annual Drill of the current year.

No. 9.

Colonel J. W. Laurie, of Her Majesty's Army, having also held a commission as Colonel in the Militia of Nova Scotia, is confirmed as such in the Militia of the Dominion taking rank from 3rd May, 1862—the date of his original commission—under the provisions of section 33, par. 2 of the Militia and Defence Act of 1868.

No. 10.

PROVINCE OF ONTARIO.

38th "Brant" Battalion or "Dufferin Rifles."

The following officers of 38th Battalion having absented themselves from the annual drill ordered for their Battalion for 1873-74, their services are hereby dispensed with:—

Major Hiram Dickie is placed on the retired list retaining rank.

Captain and Brevet Major David Spence, No. 3 Company, is also placed on the retired list, retaining his brevet rank.

Captain and Brevet Major Henry Lemmon, No. 4 Company, Captain and Brevet Major David Curtis, No. 2 Company, and Captain Fredsrick G. De Hammet, No. 1 Company, are removed from the list of officers of the active militia

The Deputy Adjutant General of Military District No. 2 will forthwith take steps to secure the Arms, Clothing, and other public property issued to the Captains thus removed.

An inventory will be made and all deficiencies reported immediately to Head Quarters in order that the necessary steps may be adopted with regard to them.

By Command of his Excellency the Governor General.

WALKER POWELL, Lieut.-Col.

Deputy Adjutant General of Militia, Canada.

A PLACE FOR EVERY MAN.

"The Brewers should to *Malta* go.
The Loggerheads to *Scilly*,
The Quakers to the *Friendly Isles*,
The Furriers all to *Chili*,

From *Spithead* Cooks go o'er to *Greece*;
And while the Miser waits
His passage to the *Guinea* coast,
Spendthrifts are in the Straits.

Spinsters to the *Needles* go,
Wine-bibbers to *Burgandy*;
Gourmands should lunch at *Sandwich Isles*
Wags in the *Bay of Fundy*.

Musicians! hasten to the *Sound*—
The surplice priest to *Rome*;
While still the race of Hypocrites
At *Canton* are at home.

Lovers should hasten to *Good Hope*—
To some *Cape Horn* is pain;
Debtors should go to *Oh-i-o*,
And Sailors to the *Maine*.

Hie, Bachelors to the *United States*,
Maids to the *Isle of Man*;
Let Gardeners all to *Botany* go,
And Shoeblacks to *Japan*.

Thus emigrants and misplaced men
Will no longer vex us;
And all that aren't provided for
Had better go to Texas."

THE SUPERB AND TEMERAIRE.

Two iron clads of very considerable interest are now being rapidly proceeded with at Chatham. One, the *Superb*, is fully completed in outline, and two strakes of her armor are being worked on. She will be ready for launching in March next, and a fine and exciting scene it will be to see the noble mass of nearly 5,000 tons of iron delivered into the water. The other, the *Temeraire*, has as yet but her framing partially erected, and will not be ready for undocking before the coming year. These two vessels are the latest designed first-rate rigged iron clads of the Royal navy, and are both broadside ships. The *Superb*, is best described as an improved and more powerful *Sultan* or *Hercules*, with a double storied central battery, and the usual water line belt of armor. The *Temeraire* is of nearly the same displacement as the *Monarch*, but of very different proportions of length to breadth, and has a central battery on the main deck only; but her chief novelty consists in the character of the upper deck armament.

The chief particulars of the two ships are: The *Superb*: Length, 325 ft.; breadth, extreme. 63 ft. 8 in.; draught forward. 26 ft.; aft, 26 ft. 6 in.; displacement, fully laden, 9,400 tons; indicated horse power of engines, 8,000; speed at full power, estimated, 14 knots; armament—main deck, eight 18 ton guns; upper deck, two 18 ton guns and two 25 ton guns. The *Temeraire*: Length, 285 ft.; breadth, extreme, 62 ft.; draught forward, 26 ft. 6 in.; aft, 27 ft., displacement, fully laden, 8,400 tons; indicated horse-power of engines, 7,000; speed at full power, estimated, 14 knots; armament—on main deck, two 25 ton guns, four 18 ton guns; on upper deck, one 25 ton gun, one 18 ton gun. The *Superb's* water line region will be protected by 12 inches of iron plate outside of 10 inches of teak backing, and an inner skin of 1¼ inch iron, with the usual strong girders attached; and on the protected parts of the sides 10,8, and 6 inch armor will be fitted outside 12 inches of teak, with a similiar arrangement of girders and inner skin. The *Temeraire* will have 11 inches of armor at the water line 10, 9, and 8 inches on the other portions of the hull protected, and teak backing of the same thickness as on the *Superb*, with a similar, or slightly thinner, inner skin. These figures will be seen to represent considerable advances on iron clads of similar type when it is stated that the *Sultan* has a maximum of 9 inches of armor, and for the most part 6 inches only, she having been previously the most powerful rigged iron clad in the navy.

The unmasted ships, such as the *Fury* or *Devastation*, are, of course, much better protected than the *Superb*, having 12 or 14 inches of armor; and the *Inflexible* cannot be compared with any of her predecessors, her armor having a total maximum thickness of 24 inches. Both the *Superb* and *Temeraire* have the armor caried well down over the bow, as well as an armored bulkhead in the after hold as a protection against raking fire. In armament, also the *Superb* is a considerable advance upon the *Sultan*. Her main deck battery contains an equal number of 18 ton guns, but in her upper deck battery, she has two 25 ton guns firing right ahead, in support of the two formost 18 ton guns in the main deck battery, and two 18 ton guns firing right astern. The *Sultan* has two 12 ton guns in her upper battery, these being capable of fighting on the broadside or right astern, while the only right ahead fire is from two 12 ton guns in the bow battery, they being supplemented by the fire, within 15 degrees of the keel, of the two formost 18 ton guns in the main deck battery. The *Temeraire's* main deck battery contains four 18 ton guns, fought on the broadside only, and two 25 ton guns firing right ahead. These bow chasers, like the two corresponding 18 ton guns in the *Superb*, are fought at ports in the formost bulkhead of the battery, the side being recessed to admit of the fore and aft fire, and they are shut off from the broadside guns abaft them by means of a traverse bulkhead well armored, which prevents the chance of serious injury to the other guns should a shot or shell enter the bow chaser ports. This is a novel arrangement, introduced for the first time in the *Superb* and repeated in the *Temeraire*. Its advantages will be obvious. The upper deck of the *Temeraire* will be mounted in a very unusual fashion, and her rig will also be singular. She will have two masts only, and be brig rigged; nevertheless she will have a very good spread of canvas for an iron clad. The *Superb* is to be barque rigged, with the usual three masts. Before the *Temeraire's* foremast and abaft her mainmast two lozenge-shaped fixed armored towers are to be built upon the upper deck, projecting slightly above the forecastle and poop. In each tower there will be a revolving turning table, carrying a gun which can be elevated above or sunk below the shelter of the armored wall of the tower by hydraulic power. The bowsprit is to be portable, and when it is taken away the 25 ton gun, firing *en barbette* over the foremost tower, will sweep through the whole 180 degrees of horizontal training over the bow, and will cross its fire with the broadside guns of the battery by training abaft the beam. Similarly, a very extended horizontal range, as well as direct fire astern, will be secured to the after gun. When lowered into their position for loading, both guns will be raised the gun loaded, and raised or lowered, elevated or depressed, and the turn table traversed by hydraulic power, whilst communication will be afforded by an armored plated trunk, reaching from the base of each tower to the strongly plated main deck. Iron plating 1¼ to 1 inch in thickness is worked over the whole surface of this deck before and abaft the central battery in both the *Superb* and the *Temeraire*.

Both the new ships have twin screws, and in both another novel feature of construction recently introduced into the iron clads of the Royal Navy has been adopted. A central water tight bulkhead runs through the engine and boiler rooms, and very efficiently increases the water tight subdivisions, as well as reduces the chance of possible disablement of the machinery by injury to the bottom and consequent influx of water. As regards the other structural arrangements, it need only be said that they are in accordance with the most approved forms of the bracket frame system, the weight of hull proper being kept as low as possible, consistently with the retention of the strength needed to carry the heavy weights of armor, guns, and equipment. The *Temeraire* will have a sheathing of zinc upon the bottom, and her ram bow is specially constructed so that the spur proper can be shipped or unshipped when desired and carried on board, so that she may prove when on ordinary service a less troublesome friend to her consorts than some of our present ironclads have proved to theirs. The engines in both ships are on the compound system, for the sake of economizing fuel, though both ships carry a very large supply. The boilers are kept low down, and the fires are stoked from the sides of the stockhole instead of from the middle, as usual. The only foreign vessels to which these ships can be compared are the French *Redoubtable*, building at L'Orient, and the Brazilian *Independenzia*, just launched on the Thames. The latter is to carry four 38-ton Whitworth 1,200 pounders. The fact of these Whitworth guns throwing so much heavier projectiles than the 35 ton Woolwich 750 pounders carried in some of the largest of our own mastless iron clads, although but three tons more weight of metal in the gun, and only 10 lb. more in charge of powder, being 120 lb. as against 110 lb., raises rather solemn reflections as to the fighting capacity of the *Superb* and *Temeraire*, armed as they are with more numerous but lighter artillery. On the other hand, the foreign vessels have only single screws, and are weak in steering power, our own ironclads having twin screws and double steering gear—elements, perhaps, not less important than the armament itself.

MOVEABLE TORPEDOES.

(From the Army and Navy Journal.)

A series of experiments with the Ericsson torpedo, applied to the *Intrepid* under the command of Captain A. P. Cooke, U. S. N., was brought to a close at the Brooklyn Navy-yard, Oct 26th, on which occasion the submerged machine was run out in the East River and hauled back by the reel, eleven times. These experiments on board of the Intrepid, carried out principally on Long Island Sound and the Narragansett Bay at Newport, have been quite protracted, the object being to ascertain definitely whether accurate steering can be effected without electric agency, by simply admitting more or less air into the tow-line cable. Those who have paid attention to the subject are aware that agreeable to the descriptions which have been published, the steering is effected by applying the force of compressed air against the tiller on one side, counteracted by the tension of a spring on the opposite side. Accordingly, the motion attending the yielding of the spring when subjected to the action of superior air pressure conveyed through the tubular cable furnishes the motive energy for operating the rudder. As a mechanical propo-

sition, the scheme of developing a varying amount of energy within the torpedo by admitting more or less air through the cable, is unquestionably sound; but how far the available differential motive power called forth by the opposing forces described, is sufficient to operate the rudder by a *direct* application to the tiller, practice alone can determine. The torpedo applied to the *Intrepid* having been run out, and hauled in, upwards of one hundred times without leading to an exact determination of the proper position of the valve which regulates the admission of compressed air to the tubular cable, it has become evident that the plan of steering, as intended, involves too much nicety in practice. The constructor therefore, on receiving a copy of Captain Cooke's report to the Bureau of Ordnance, at once modified the steering apparatus within the torpedo in such a manner as to render its action wholly independent of the *amount* of differential force of the compressed air and the counteracting tension of the spring before adverted to. The mechanism thus modified, was however not perfected and applied until the trial in the East River on the 26th of October—the *Intrepid* going out of Commission the following day. The strong current in the East River rendered any decisive test impossible; but the amended mechanism certainly enabled the operator to control the position of the rudder of the torpedo in a more satisfactory manner than during the previous experiments.

The *Intrepid* being no longer available for experiments, the Chief of the Bureau of Ordnance has ordered the torpedo to be applied to the *Nina* which is now undergoing repairs at the Navy yard. The question whether by means of the amended steering apparatus, (tested for the first time on the East River as before stated,) the course of the torpedo can be properly directed, will therefore soon be practically determined. It is scarcely necessary to observe, that the utility of the new torpedo system would be but slightly affected should it be found necessary to attach a wire to the tubular cable for the purpose of actuating the rudder by means of electricity. An adequate supply of compressed air being always present within the torpedo, electro magnetic agency would, of course, only be needed to operate diminutive valve connected with the steering apparatus. Regarding the application of electricity, Captain Ericsson has called our attention to the fact that, the method proposed in certain quarters of merely passing a wire through the cable, would prove abortive on account of the great elasticity of the cable. An elongation of 40 feet in a length of 700 feet, it appears, takes place under the tension produced by running the torpedo engine with full power. Hence in order to prevent the wire from being torn by the stated extensive elongation of the tubular cable, it must either be coiled within the cable and then protected by a coating of gum or inserted, during the process of manufacture, between the layers of canvas composing the cable. By this expedient, the wire would form a helix capable of being extended during the elongation of the tubular cable consequent on the tractive force exerted by the propellor of the torpedo, and by the rotation of the reel while being hauled in. It is reasonable, however, to assume that the simple method of admitting more or less compressed air into the tubular cable for the purpose of operating a small valve connected with the steering apparatus, will prove successful in practice. The result of the trial with the amended steering apparatus in the East River on the 26th of October, reported by Captain Cooke, favors our assumption. In the meantime it is satisfactory to know, that the protracted experiments conducted by Captain Cooke on board of the *Intrepid* prove, that we now possess a reliable submerged moveable torpedo the endurance and trustworthy character of which is beyond dispute, since it has been run out and hauled in more than two hundred times without the slightest accident to the motive engine; nor has the mechanism for regulating the submersion been out of order at any time during the trial. The remarkable expedient of allowing the sea to enter freely into the engine compartment of the torpedo, dispenses with stuffing boxes round the propellor shaft and the axle by means of which the submersion is regulated, besides doing away with the necessity of oiling the bearings of the machinery. The ever present difficulty unavoidable in mechanism which is not accessible—rust and abrasion—has been completely overcome by constructing the internal mechanism wholly of bronze, and by running the journals in bearings composed of box wood effectually lubricated by the surrounding sea water. Personal attention is therefore entirely dispensed with. Regarding the size of the torpedo it will be well to state, that the main body consists of a square tank slightly taper at the ends, composed of thin steel plates 8 feet 6 inches long, 30 inches deep and 20 inches wide. A taper block of wood, 18 inches long, attached to the after end of the tank, forms the stern; while the vessel containing the explosive charge 400 pounds of nitro glycerine, represented by a solid block semi circular at the forward end, 27 inches long, forms the bow. It only remains to be mentioned that owing to the small size of the torpedo and the perfect drill of the crew of the *Intrepid*, it has been landed with extraordinary facility during the experiments, not a single accident having occurred during the frequent taking on board and launching of the machine.

GATLING GUNS IN CHINA.

The two great Oriental empires across the Pacific seem to be rapidly coming under the influence of Gatling guns and modern artillery, and promise to rival their western prototypes in the development of destructive tendencies. Under the date of September 30 the Yokohama, Japan, correspondent of the San Francisco *Alta* says:

"Peace or war? is the question on every one's lips. There are said to be 50,000 troops in Tokio under daily drill. These soldiers are actuated by the most loyal and patriotic spirit, and declare themselves ready for any required service. The uncle of the Mikado, Prince Higashi Fushimi no Miya, will take the field as commander in-chief. He recently returned from England, via San Francisco. There is considerable discussion as to how far the good offices of foreign representatives have been exercised in smoothing over existing difficulties between the cabinets of Peking and Tokio. They are generally credited with a desire that neither countries should win, or that both might be worsted, fearing that the victorious nation might become arrogant toward all foreigners when elated with the flush of victory. The foreign representatives at Peking write that there is every outward indication of war displayed by the Chinese, who are raising money, purchasing arms and vessels, engaging drill masters, and enlisting men; but that there is, amid all this existing agitation, a vast quantity of despatch writing and interviewing going on between the ministry of Okubo, the Japanese ambassador, neither party seeming desirous of engaging in actual hostilities until after every resource of diplomacy has finally failed. The Japanese Embassy left Tientsin September 6, and reached Peking September 9, since which time they devoted themselves to the negotiation of honorable terms, in acknowledgment of the Japanese work of pacification in aboriginal Formosa. The Chinese Government has recently effected a loan of 3,000 000 taels (equal to $5,000,000) from the Oriental Banking Corporation, for which ample security has been pledged. Doubtless many British subjects look upon wars as excellent opportunities, providentially offered, of virtually buying out the country. The finances of Japan are in a good and prosperous condition, and should the war cloud pass over she will need no present assistance. The ultimate resources of the Chinese are, however, far greater than those of Japan, and the practically illimitable number of men—such as they are—which she could bring into the field during a protracted contest, may well be considered by the Japanese cabinet, which, during an extended war, will surely occur and cripple her, and often defeat her most effective movements. The Chinese have recently received ninety American Gatling guns, with cartridges, from the United States, and it is understood Japan has also ordered several such batteries. The Chinese Empire is said to comprise 425,000,000 of people, while Japan, which is a sparsely settled country, has but 33,110 000 by her last census, taken on blank forms, similar to those used in the United States. The general opinion on the war question among these best informed seems to be that unless the degradation of Prince Kung should affect negotiations unfavorably, the main points of agreement are about settled between the two countries, and the outstanding disagreement is only one of how much money damage shall be paid by China to Japan. It is reported that already China has made three distinct propositions for settlement in each one of which she has increased the amount of her offers of indemnity, for she well dreads the proverbial courage of the Japanese, and their superior drill and discipline."

A correspondent of the *World*, writing from Yokohama, September 30th, says: There is a growing clamor on the part of the Japanese people for war, and no doubts are entertained by them of the results of a conflict with China. The informed will understand the disparity of population and resources, but they rely upon the unanimity and valor of Japan as opposed to the disaffection and cowardice of the Chinese soldiery. They are even confident of immediate successes that will enable them to throw the expenses of the war on China. Warlike preparations at Jeddo are still continued with great energy. Such is the ardor to enlist in the army that numerous rejected applicants are reported to have committed suicide. Troops are rapidly shipped to the south, en route to Formosa or China, as the case may be. The Government is receiving the encouragement of the powerful clans in all parts of the empire. The memorial received from the Shizoku, which expresses the common sentiment of all, after discussing the points at issue, declares that in the opinion of the leaders, "under present circumstances, it is better to have war; or we shall create contempt abroad and trouble at

home, and at length, unless we put the whole empire of China under our power, we shall decline and make as poor an appearance as Poland in Europe Indeed, upon this one effort the existence of destruction of our empire depends. An thus we cannot restrain our mortification, our sorrow, and our anger." On the 26th the greatest review ever witnessed in the empire was held at Tokei, under the eye of the Mikado His Majesty, mounted on a magnificent white horse, took command of the troops, who were then marched to Iizusima. On arrival there manœuvres were commenced which lasted until night. The troops took their rations on the ground, The emperor appeared very pleased with their soldierly appearance and the precision with which they went through their drill. About 7 p. m., a body of about 4,000 of these troops escorted his majesty to the imperial residence. The representative of an American firm left here for the United States by the steamer of the 12th, commissioned to purchase a large quantity of rifles on Japanese Government account. It is also reported from Jeddo that the Government has despatched officers to the United States to negociate for the purchase of ironclads. The latest advices from the Japanese camp at Formosa report a great prevalence of sickness among the troops, and a death rate of about thirty per day. The Japanese and natives are on amicable terms with the exception of one or two tribes. A meeting of the nobles will be held on the 25th to consider the question of contributing a part of their revenues to assist the Government during the expected war. The ironclad *Adzumeken* formerly the *Stonewall*, has been released from her dangerous position on the rocks, where she was driven by the typhoon of the 20th of August, and it was found that she had sustained but slight damage. This shows that the Japanese understand one of the necessities of successful war—the art of promptly repairing a disaster. Chinamen would have been a month getting ready to accomplish such a feat.

From Hong Kong a correspondent of the same paper writes, September 20: China is in no condition to combat with any power untilits whole military and naval system has been reorganized and reconstructed on the European model. Her soldiers and officers are still arrayed in the semi barbarous, grotesque, and cumbersome habits, and provided with wretched armament, while the Japanese have adopted the most approved modern uniforms, and are supplying themselves with the best of arms and acquiring skilful practice in their use,

If it comes to a contest the Japanese will, as we have reason to know, find that their rivals are not so far behind. The correspondent from whom we first quote is correct in crediting them with the purchase of Gatling guns, the invention of which has opened to American manufacturers a new and by no means inconsiderable source of revenue.

The *Army and Navy Gazette* says that one of the new 38 ton guns for the *Thunderer* has just been completed in the Gun Factories at Woolwich It will be remembered that the four 35 ton guns, or "Woolwich Infants," originally destined for the armament of that vessel, have been discarded by the Naval authorities, and doomed to spend a dreary existence in the forts within Cork Harbor. It was one of these four, in point of fact, which met with an untimely end some days ago by slipping away from the raising gear and sinking to the bottom of the water whilst being removed from a barge in the harbor. It has now, however, been determined to arm the *Thunderer* with weapons of the new type, and two have been hurriedly finished for mounting within its turrets at once. They are both of precisely similar description. The idea of increasin the diameter of the bore to 12½ in. has not been developed in them, and in this respect and the rifling they are like the original "Infant," but the proportions and contour vary consideraby. The length, which is three feet greater than that of the old gun, is 19 feet; that of the bore being 16 feet 6 inches. The depth at the breech is 4 feet 9 inches. The ammunition used will be similar to that manufactured for the 35 ton gun, and no difference will be made in the charge at present. This is the first 38 ton gun that has actually been completed for service.

The *Borsenzeitung* of Berlin says that the result of the trials made with the new Krupp field guns constructed for the German field artillery has been in every way satisfactory, all accounts agreeing that they are superior to those hitherto adopted either by Germany or any other nation for use in the field, One of the causes of this superiority is that the new guns, besides having a larger charge of powder than has hitherto been employed, carry a long grenade with a very strong explosive mixture, so that when fired it bursts into two and a half as many fragments as an ordinary shell. The shrapnels, too, contain more shot than the ordinary ones. The loading apparatus works exceedingly well, and is simpler than that of the eight-centimetre gun; the powder used is coarse grained. The new guns are also provided with non gun carriages, and their total weight, even in the case of the heavier calibres, is not so great as that of the present eight-centimetre gun. The fuze apparatus alone is somewhat defective, but it is hoped that the necessary improvements will be made in it without much difficulty. The firm of Krupp has engaged to provide a sufficient quantity of these guns to equip the whole of the German field artillery, with the necessary reserve, by next spring. Remarking on the accounts of these trials which have reached England, the London *Army and Navy Gazette* says that they show 'that the German Army is about to have the most formidable artillery in the world,' that the English muzzle loading field guns cannot be "at all compared to the new Krupp breech loaders, especially as regards the diffusion of shell splinters at long ranges with a very flat trajectory," and adds that 'special reports have been received respecting the new and tremendous shell which give a startling account of its power.

M. de Lesseps's plan of joining the Mediterranean at Gabez with the long string of lakes leading to the south of Algeria is likely to drop. An eminent French engineer, who has lately visited the spot reports that the lakes are high than the sea, and a canal would simply drain them; furthermore, if the plan were feasible, it would cost £12 000,000 sterling, on which there would be no adequate return.

London, Dec, 3.—Capt George S. Nares, now in command of Her Majesty's ship "Challenger," has been selected to command the expedition to be fitted out by Great Britain for explorations in the Arctic region.s

THE TROUBLE WITH JAPAN.

Hong Kong. 28th.—The Chinese have agreed to everything required by Japan. They recognize and admit the justice of the Japanese course, and have paid a portion of the indemnity—500 taels—the balance to be paid before the end of the month. They agree to keep the Formosa savages under control for the future. The Japanese will retreat from the island. There is great satisfaction in Japan over this result, but so little has the government been influenced by pecuniary motives, that it has been already determined to return a part, if not the whole of the indemnity. It is only as an unmistakable acknowledgment of the propriety of their action they received the money, and that having been vindicated, they are disinclined to keep it Renewed efforts were made to induce the Chinese to submit their quarrel with Japan to diplomatic arbitration, but the Peking Government were entirely averse to such proposals.

Professor Watson, head of the African Expedition in Peking for the observation of the transit of Venus, discovered on October 8th a new asteroid of the eleventh magnitude.

Twelve thousand Chinese troops are now in Formosa, stationed about sixty miles from the Japanese camp. The British residents in Chefoo have petitioned the Council to secure the presence of a ship of war at that port during the winter. They fear the rising of the natives against foreigners in case of war.

CAVALRY INSPECTION.—The annual inspection of the Queen's Own Canadian Hussars took place on Saturday, the 28th inst. at the Cavalry Barracks. Lieut. Colonel Forsyth, the officer commanding this fine old corps, received the inspecting officer, Lieut Col. Lamontague, Acting Deputy Adjutant General, with the usual salute. While inspecting the squadron, Colonel Lamontagne gave great praise to the corps for the very clean, smart, soldier like appearance of the men, the creditable manner in which they were mounted, as also the splendid appearance of their arms, accoutrements, and saddlery, for which last particular we have the highest authority for saying they rank second to none in the Dominion Both troops were then put through a number of manœuvres, including skirmishing, carbine and sword exercise, the whole of which were gone through with great steadiness both by men and horses—Captain Macdonald, Lieut. Flanagan, and Cornet Martin, of No. 1 Troop, being severally called out, as also Colonel Turnbull, of No. 2 Troop. The roll was then called by that efficient and popular officer Major Forrest, Paymaster to the District, and showed out of the total strength of 9 officers and 80 non commissioned officers and men, but 1 officer and 5 men short, being absent on leave. The Hussars, headed by Colonel Forsyth, then marched through the town, and besides the officers already mentioned, we noticed the Adjutant, Major Gray, the Quarter-Master, Capt. Julien, and Riding Master Brown. We cannot conclude without mentioning the name of Regimental Sergeant Major Maguire (late H.M. 13th Hussars), to whose untiring exertions, we are informed, to a great extent, the present efficiency of the corps is due.

Brazil Dec. 2.—Intelligence has been received here of the conclusion of peace between the Argentine Government and Gen. Mitre, who with his officers and soldiers have been granted an amnesty.